



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

2777. Proposed by W. D. CAIRNS, Oberlin College.

Prove that the two series

$$1 + \frac{\pi^4}{2^4 \cdot 4!} + \frac{\pi^8}{2^8 \cdot 8!} + \cdots,$$

and

$$\frac{\pi^2}{2^2 \cdot 2!} + \frac{\pi^6}{2^6 \cdot 6!} + \frac{\pi^{10}}{2^{10} \cdot 10!} + \cdots$$

are equal.

2778. Proposed by WARREN WEAVER, University of Wisconsin.

A partition of space is effected by means of five planes, none of which are parallel and no four of which pass through the same point, and six spheres. This divides all space into n regions, some of which are finite and some infinite. Considering it equally probable that a bird be in any one of the n regions show that the probability of its being caught (that is, of its being in one of the finite regions) is equal to or less than $78/99$.

2779. Proposed by J. L. RILEY, Junior Agricultural and Mechanical College, Stephenville, Texas.

A parabola is placed with its axis horizontal; find the straight line of shortest descent from the curve to the focus.

406 (Algebra) [March, 1914]. Proposed by S. A. COREY, Albia, Iowa.

Solve the system of equations:

$$(1-x)(a_1 + a_2y + a_3z) = d, \quad (1-y)(b_1 + b_2x + b_3z) = g, \quad (1-z)(c_1 + c_2x + c_3y) = h.$$

411 (Algebra) [April, 1914]. Proposed by V. M. SPUNAR, Chicago, Ill.

Determine $x_1, x_2, x_3, \dots, x_p$, from the equations:

$$\begin{aligned} x_1 + x_2 + x_3 + \cdots + x_p &= a_0, \\ b_1x_1 + b_2x_2 + b_3x_3 + \cdots + b_px_p &= a_1, \\ b_1^2x_1 + b_2^2x_2 + b_3^2x_3 + \cdots + b_p^2x_p &= a_2, \\ &\vdots \\ b_1^{p-1}x_1 + b_2^{p-1}x_2 + b_3^{p-1}x_3 + \cdots + b_p^{p-1}x_p &= a_{p-1}. \end{aligned}$$

442 (Geometry) [May, 1914]. Proposed by J. B. SMITH, Hampden-Sidney College.

If any three straight lines AD, BE, CF , be drawn from the corners of the triangle ABC to the opposite sides a, b, c , they will enclose an area. If Δ, Δ'' be the areas of the triangles ABC, DEF , show that

$$\frac{\Delta''}{\Delta} = \frac{(AF \cdot BD \cdot CE - AE \cdot CD \cdot BF)^2}{(ab - CE \cdot CD)(bc - AE \cdot AF)(ca - BF \cdot BD)},$$

where the signs of the factors are to be determined by the following rule: Each segment being measured from one of the corners of the triangle ABC , along one of the sides, is to be regarded as positive or negative according as it is drawn towards or from the other corner in that side.

455 (Geometry) [February, 1915]. Proposed by R. P. BAKER, University of Iowa.

Find the minimum triangle of assigned angles inscribed in a given triangle.

348 (Calculus) [December, 1913]. Proposed by E. L. DODD, University of Texas.

Let (x_1, x_2, \dots, x_n) be a point in n dimensions lying in the "sphere" S defined by

$$x_1^2 + x_2^2 + \cdots + x_n^2 \leq 1.$$

Let T be that part of S defined by a set of n linear homogeneous inequalities with non-vanishing determinant; thus:

$$a_ix_1 + b_ix_2 + \cdots + k_ix_n \geq 0, \quad i = 1, 2, \dots, n.$$

Find the value of